



UNIVERSITY
OF SOUTHERN
CALIFORNIA

5/12/05

Carlos Khantzis, President-CEO
California Design Studio Inc.
31280 Oak Crest Drive #4
Westlake Village, CA 91361

Re: Shoe testing

Department of
Biokinesiology &
Physical Therapy

Dear Carlos,

Thank you for the opportunity to test your product at the Musculoskeletal Biomechanics Laboratory at the University of Southern California. As per our conversation today, I am including a summary of the procedures we used to obtain the data summarized in the attached graphs.

Description of data acquisition procedures

Electrical activity of the medial gastrocnemius and soleus muscles were recorded using pre-amplified bipolar surface electrodes (Motion Lab Systems Inc., Baton Rouge, LA) from 4 volunteers (2 males, 2 females). All EMG data were sampled at 1560 Hz as subjects walked along a 10-meter walkway.

Prior to testing, each subjects' skin was shaved and cleaned with alcohol. Surface EMG electrodes were then placed over the medial gastrocnemius and soleus muscles of the right lower leg. Electrodes were then secured with tape. The EMG unit was attached in a backpack secured to the subject's back.

After a five minute accommodation period, all subjects were asked to walk at their normal walking velocity under three conditions. Subjects first walked with a pair of commercially available sandals (Sketchers Inc.), followed by a specially made sandals with a gel pad inserted in the forefoot region. Finally subjects were instructed to flex their toes while walking with the gel pad inserted sandals. Two walking trials for each condition were collected and averaged. The walking velocities of all trials were controlled to be within 5% of each other.

To allow for comparison of EMG intensity between muscles and subjects, and to control for variability induced by electrode placement, muscle EMG activity during walking was normalized to the EMG acquired during a maximal voluntary isometric contraction (MVIC). The MVIC test for the two muscles was performed with a standardized manual muscle testing position.

Summary of results

As noted in the attached graphs, EMG activity of the gastrocnemius was 9% greater in the "flex toe" condition with the gel insert as compared to the standard sandal condition. Activity of the soleus was 20% greater with the "flex toe condition" with the gel insert as compared to the standard sandal condition. No meaningful changes were observed in either muscle between the standard sandal condition and the sandal with the gel inserts.

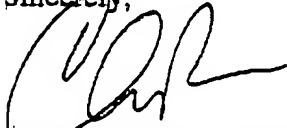
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As per our agreement, you cannot make reference to the University of Southern California, the Musculoskeletal Biomechanics Research Laboratory or any laboratory personnel (including myself) in the promotion of your product.

Once again, I appreciate the opportunity to work with you on this project and wish you the best in your future product development. If you have any questions, please feel free to contact me directly.

Sincerely,



Christopher M. Powers. Ph.D., P.T.

Associate Professor

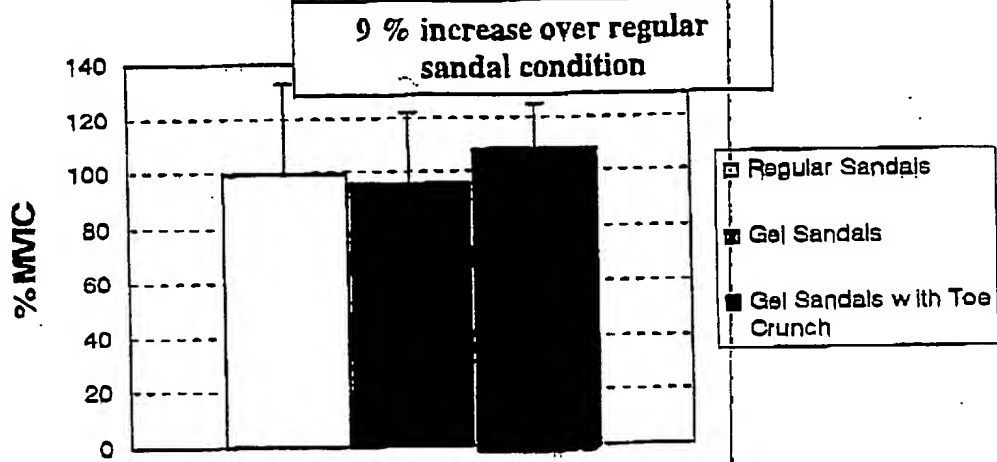
Co-Director, Musculoskeletal Biomechanics Research Lab

Dept. Biokinesiology & Physical Therapy

Dept. Radiology & Orthopaedic Surgery

University of Southern California

Gastrocnemius EMG



Soleus EMG

